an innovation in load security by DYNATEX s.a.

DYNATEX s.a.
Christophe Callens

Regulations

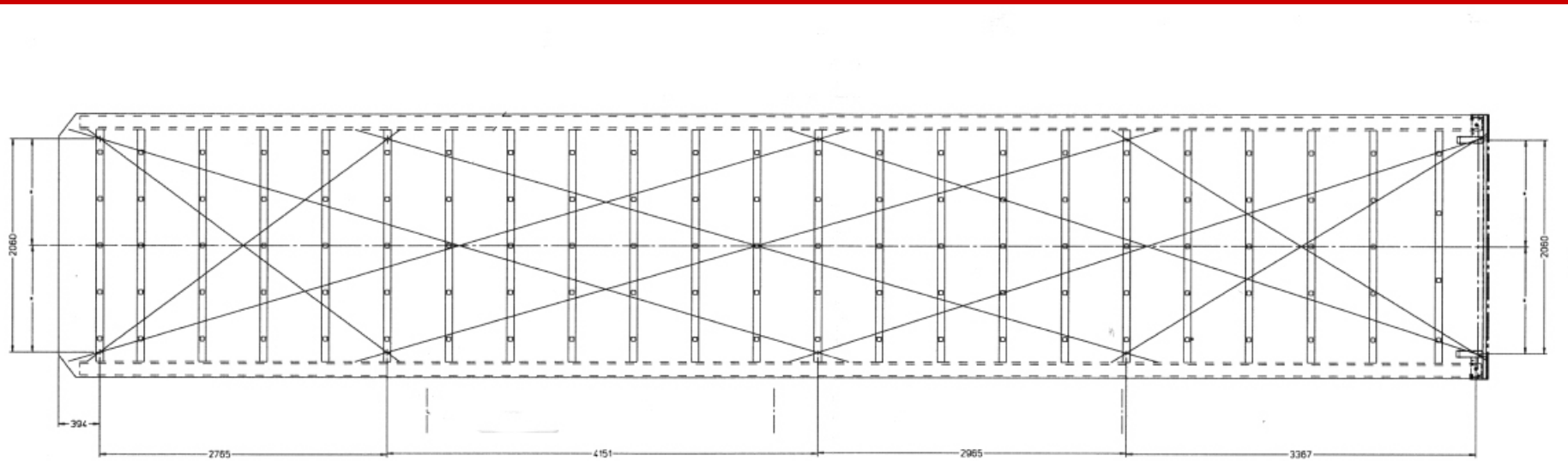
- DCE 9.5
  - Trailer structure reinforcement system based on steel cables attached in the roof structure developed by Daimler-Chrysler
  - This system was developed and imposed by Daimler-Chrysler to all carriers because the shipper was made responsible for the transport
- VDI 2700
- EN 12642 code L / XL

Testing of the structure

Test loads (absolute values) for the determination of the structure firmness with a pay load of 27.000 kg

	DCE 9.5	EN 12642 L	**EN 12642 XL**
Front wall	13.500 daN	5.000 daN	**13.500 daN**
Side panel (standard)	8.100 daN	8.100 daN	**10.700 daN**
Side panel (box)			**13.500 daN**
Rear panel	8.100 daN	3.100 daN	**8.100 daN**

Cable systems



Negative aspects

- Few anchoring points ➔ cables & folding plates break
- Horizontal rollers replaced by massive steel blocks ➔ damaging the aluminium sections & obstructing the easy opening of the roof
- Cables hang into the trailers' loading space upon opening of the sliding roof

Versus-Omega
Coatex
Dynatex

… joined forces
to develop
the Carapax concept

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The Carapax concept

- Reinforcement element is a Kevlar® aramid fibre (5x stronger than steel)
- The aramid fibres are welded into the roof curtain ➔ no obstruction to opening
- The aramid fibres are attached to every roofstick ➔ all lateral forces are divided over the total length of the trailer ➔ no damage to the rails

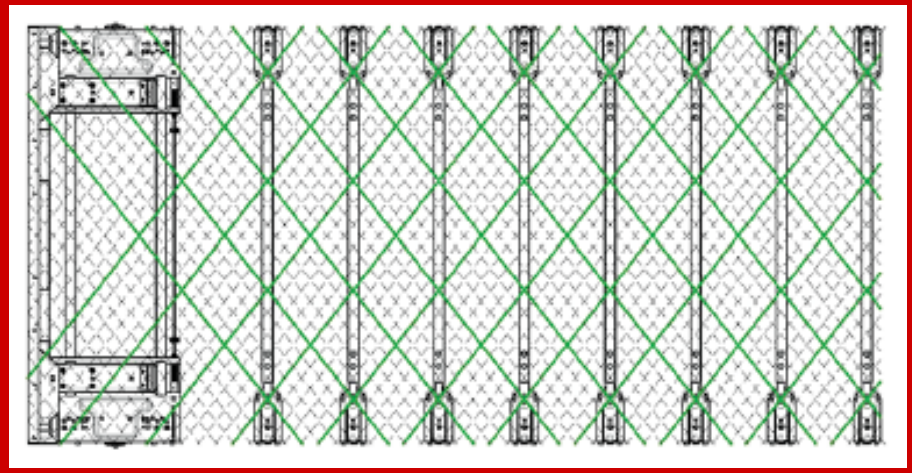
↳Tested by TÜV Nord & DEKRA
to comply with EN 12642 code XL

The Carapax concept

- Carapax is made of:
  - Outside PVC fabric (generally ½ panama)
  - Bi-axial aramid composite reinforcement (with black directional filaments)
  - PVC coated PET mesh (bonding layer)

The Carapax concept

- The crossings of the aramid filaments, visible at the underside of the roof curtain, must be connected on every roofstick
- Important is the repetitive connection of each roofstick to the fourth following roofstick at the other side

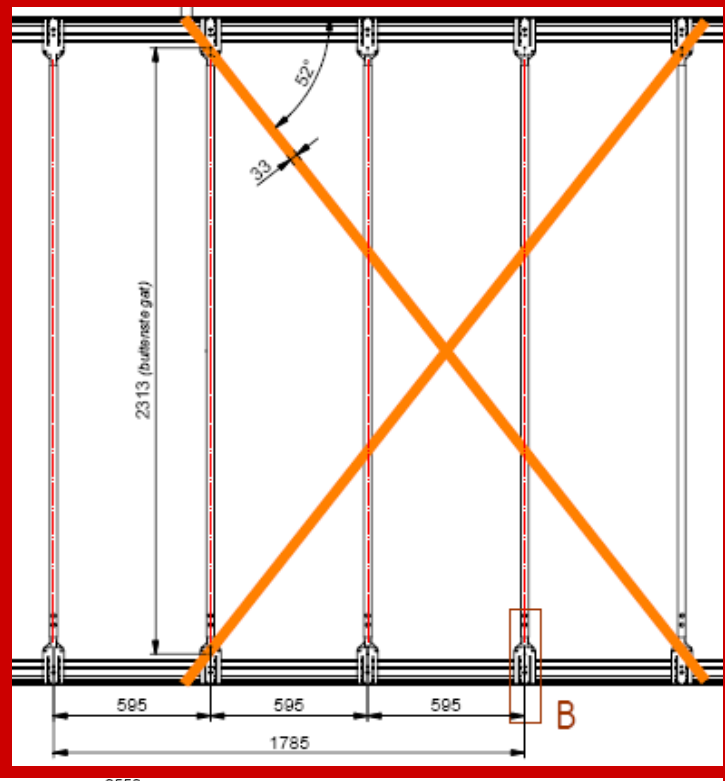


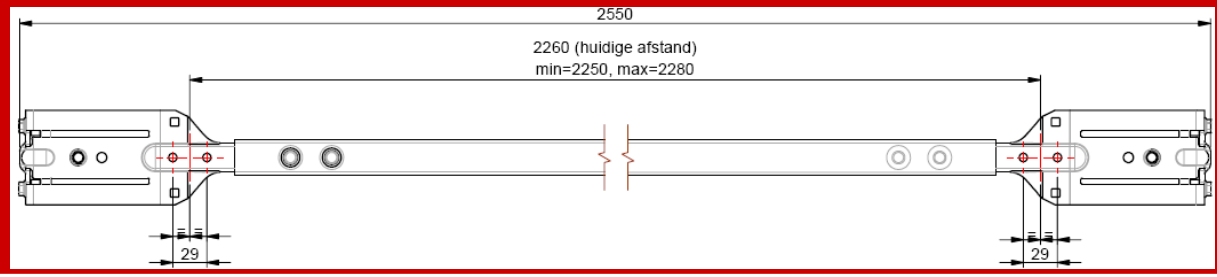
The Carapax concept

The Kevlar® or Twaron® filaments are connected to every roofstick by a canopy clamp with 2 M6 screws

Designing a new roof

- Important measures
  - Width between anchoring points on the roofstick (A)
  - Spacing between each roofstick (B)
  - Angle = ATAN((A / (B*3))





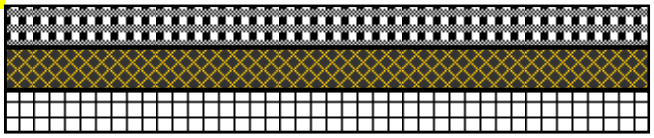
DYNATEX
Multiaxial composites

carapax
the outer shell with inner core

PRODUCT SPECIFICATION: CARAPAX®

VERSION: Welded
BASE FABRIC: White PVC coated fabric 690 g/m²
ANGLE: 52°

LAYERS



PVC coated fabric
Aramid laid construction
PET Mesh (PVC coated)

CONSTRUCTION

Multiaxial laid aramid construction, knitted to PET Mesh
Then welded to PVC base fabric

MATERIALS

PVC coated fabric	Fabric	Warp:	1100 dtex PET
		Weft:	1100 dtex PET
		Weave:	7 x 7
		Weight:	170 g/m² ± 10 g/m²
	Coating		PVC white 9002
	Total weight of layer:		690 g/m² ± 5 g/m²
	Total width of layer:		281 cm
Aramid laid construction	Multiaxial weft insertion	Material:	Teijin Twaron® Para-Aramid 1680 dtex
			1100 dtex PET Black (every 5 inch)
		Density:	3 filaments / inch
		Angle:	+52° and -52°
		Knitting:	330 dtex PET
	Total weight of layer:		68 g/m² ± 5 g/m²
	Total width of layer:		255 cm
PET Mesh (PVC coated)	Fabric	Warp:	1100 dtex PET
		Weft:	1100 dtex PET
		Construction:	2,8 threads/10 cm x 1,5 threads/10 cm
	Coating		PVC grey 7038
	Total weight of layer:		160 g/m² ± 15 g/m²
	Total width of layer:		255 cm

SPECIFICATIONS

Total Product weight:	± 2,52 kg / linear meter
Total Product width:	281 cm
Temperature resistance:	- 30°C / + 70°C
Flammability	no FR
Warranty	2 years